

Notice of Allowability

Application No.

10/731,991

Examiner

Isiaka O. Akanbi

Applicant(s)

BORDEN ET AL.

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 16 August 2006.
2. ☒ The allowed claim(s) is/are 1-4 and 6-41.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 16 August 2006
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ ~~Examiner's Amendment/Comment~~
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

Amendment

The amendment file 16 August 2006 has been entered into this application. Claim 5 is cancelled. Claims 36-41 have been added.

Information Disclosure Statement

The information disclosure statement file 16 August 2006 has been entered and reference considered by the examiner.

Allowable Subject Matter

Claims 1-4 and 6-41 are allowable

As to claim 1, the prior art of record, taken alone or in combination, fails to disclose or render obvious receiving a semiconductor wafer that comprising a first region and a second region, the first region comprising a plurality of dopants and wherein the coherent electromagnetic radiation is substantially of a wavelength predetermined to ensure that a penetration depth of the coherent electromagnetic radiation in the first region is between a depth of the- an interface between the first region and a well underneath the first region and thickness of the wafer, in combination with the rest of the limitations of the claim. Claims 3-4, 9-11, 13-15, 17-18, 37 are allowable by virtue of their dependency.

As to claim 2, the prior art of record, taken alone or in combination, fails to disclose or render obvious repeating said acts of (oscillating, synchronously detecting) with electromagnetic radiation of another wavelength, in combination with the rest of the limitations of the claim. Claim 38 is allowable by virtue of its dependency.

As to claim 6, the prior art of record, taken alone or in combination, fails to disclose or render obvious performing a look-up of a table of predetermined data with said amplitude as input to determine thickness of a layer in the semiconductor wafer, in combination with the rest of the limitations of the claim. Claims 19-20 and 39 are allowable by virtue of their dependency.

As to claim 7, the prior art of record, taken alone or in combination, fails to disclose or render obvious wherein only one of the first region and second region is a doped region and the

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method further comprises performing a look-up of a table of predetermined data with said amplitude as input to determine a property of the doped region, in combination with the rest of the limitations of the claim. Claims 8 and 40 are allowable by virtue of their dependency.

As to claim 12, the prior art of record, taken alone or in combination, fails to disclose or render obvious wherein the absorption length of the beam in the wafer is less than one-half of the thickness of the wafer, in combination with the rest of the limitations of the claim. Claim 41 is allowable by virtue of its dependency.

As to claim 16, the prior art of record, taken alone or in combination, fails to disclose or render obvious wherein said spot is formed on a first surface at which said doped region is located in said wafer, in combination with the rest of the limitations of the claim.

As to claim 21, the prior art of record, taken alone or in combination, fails to disclose or render obvious oscillating a first spot and a second spot that at least partially overlaps the first spot between the first region and the second region; wherein the first spot is formed by a first beam of coherent electromagnetic radiation that has a first penetration depth between a depth of the interface and a thickness of the wafer, wherein the second spot is formed by a second beam of coherent electromagnetic radiation, wherein the first beam has photon energy lower than a semiconductor bandgap energy and the second beam has photon energy greater than the semiconductor bandgap energy, in combination with the rest of the limitations of the claim. Claims 22-26 are allowable by virtue of their dependency.

As to claim 27, the prior art of record, taken alone or in combination, fails to disclose or render obvious a source of a beam of coherent electromagnetic radiation substantially of a wavelength predetermined to ensure that absorption length in the wafer is less than a thickness of the wafer but greater than a depth of a pn junction in the wafer, the first region comprising a plurality of dopants and wherein the ion implanter receives a feedback signal, based on a measurement signal generated by the measurement tool, in combination with the rest of the limitations of the claim. Claims 28-31, 34 and 36 are allowable by virtue of their dependency.

As to claim 32, the prior art of record, taken alone or in combination, fails to disclose or render obvious a plurality of additional lasers mounted adjacent to one another at a plurality of positions located along a first line, and said source is mounted adjacent to one of the additional lasers and along the first line, at least one mirror attached to means for translation along a second line parallel to the first line, and between a plurality of corresponding locations opposite to the plurality of positions of the lasers and said source, a stage for supporting the wafer, with a

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front surface of the wafer facing the beam from the mirror at normal incidence thereof, wherein the means for moving comprises an optical element located along the second line, in a path of the beam reflected by the mirror and the apparatus further comprises a beam splitter located along the second line, between the means for moving and the mirror, in combination with the rest of the limitations of the claim. Claims 33 and 35 are allowable by virtue of their dependency.

Additional Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The references listed in the attached form PTO-892 teach of other prior art method of detecting a signal indicative of a property of a structure in a semiconductor wafer.

Response to Arguments

Applicant's arguments/remarks, see pages 13-16, filed 16 August 2006, with respect to the rejection(s) of claim(s) under 35 U.S.C. 102(b) and 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn.

Conclusion

Fax/Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isiaka Akanbi whose telephone number is (571) 272-8658. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley Jr. can be reached on (571) 272-2059. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Isiaka Akanbi
October 26, 2006

A handwritten signature in black ink, appearing to read 'HWA', with a large, sweeping initial 'L' that extends to the right.

**HWA (ANDREW) LEE
PRIMARY EXAMINER**